

# Flight

First Aero Weekly in the World.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

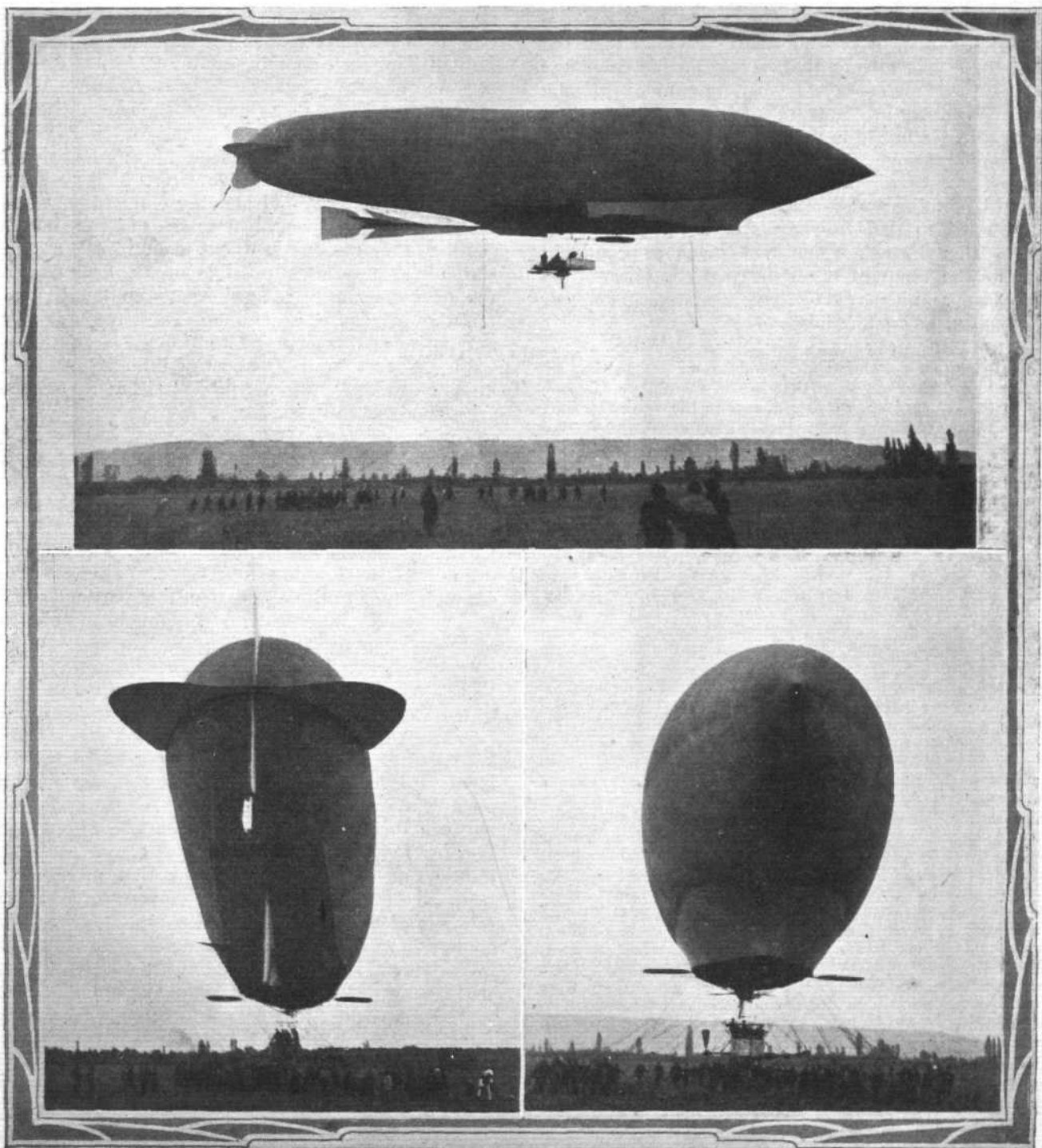
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LATEST DIRIGIBLE AIRSHIP—"LA RUSSIE"—BUILT IN FRANCE BY M. M. LEBAUDY.—Three views of this fine craft at Moisson are seen in our photographs, the lower two being respectively from the front (on the right) and from the rear end. "La Russie" is fitted with a Panhard motor.

# PATRIOTISM, BRITAIN, AND AERIAL EFFICIENCY.

THE week ending is in a sense the most memorable one in the history of flight in Britain. It has witnessed a series of announcements that are startling and stirring in their nature—albeit they come none too soon—and a succession of events that must have come as a surprise even to those who have knowledge of what is going on alike in the aeronautical world and in Government departments. We feel that to the *Morning Post* is due the initial credit for having brought all this activity to a head, for it is quite plain that the whole matter has been made public as the result of the National Airship Fund, which was inaugurated by that journal on Monday morning last, with a generous gift of £2,000 from Earl and Countess Bathurst. The sum asked for from the public is £20,000, to present the War Office with the finest foreign-built airship that is obtainable, and the appeal that was made was on such broad and patriotic lines, and couched in terms of such sound sense, that *FLIGHT* could not but approve of such eminently practical steps towards putting the nation in possession of some serviceable type of dirigible balloon with which to make an actual beginning with a real fleet. Accordingly there was addressed to the *Morning Post* a letter from the Editor of this journal, which was given a prominent position in the issue of the daily paper in question on Tuesday last, and it may save some recapitulation on our part if we print its context here:—

"Speaking on behalf of those who have for long made a close study of all matters pertaining to the science of aeronautics, we should like to endorse every word that is said in to-day's *Morning Post* as to the real urgency of your appeal to the British public. Only those who have placed themselves in close touch with investigators, inventors, and experimenters in this country and on the Continent can possibly appreciate the vast handicap under which we in the United Kingdom are striving in our endeavour to keep abreast of the times in connection with aeronautic developments. As in the early days of the motor car, it is neither the talent nor the energy which is lacking in our midst, nor is it the enterprise that is wanting on the part of far-seeing patrons. That which is causing the richest nation in the world to fall behind in this respect is the absence of official or public encouragement at the very time when popular inducements of every kind are being poured forth freely by more than one of our neighbours across the English Channel and German Ocean. Everyone will admit that before any great movement that is destined to introduce a new era can become self-supporting as a money-making industry it must either languish or must be nurtured from comparatively unselfish outside sources. And that is the critical stage that has been reached, with infinite labour, but with little, if any, chance of direct pecuniary reward by aeronautic students—a stage which is chiefly critical for the very reason that so small a section of the British public realise the extent of our practical backwardness.

"Also on behalf of those who have already associated themselves with the aeronautic movement in this country we would tender our grateful thanks to the *Morning Post* for having instituted this great appeal to the public ere the situation had become more desperate than it has already. Even the least imaginative of our fellow-countrymen must feel that this appeal is no mere idle cry of "wolf," since it is made by a great "daily" which is known above all things for its level-headedness and for its hatred of sensationalism, and we, therefore, have every confidence in the whole-hearted response which will be accorded to it. Whether the appeal be regarded from the point of view of home defence or from an industrial standpoint, its urgency is such that we, for our own part, should like to have seen the public given the chance to subscribe at least five times the £20,000 which you have asked for."

Events have marched rapidly since the day that was published, although it was but Tuesday last, and progress was from the first facilitated enormously by the prompt action of Mr. Haldane in telegraphing his satisfaction to the *Morning Post* concerning the step they were taking.

Even the very natural and widespread opinion that the Government, and not private individuals, ought to find the funds for all such national purposes as these, has very wisely not been allowed to estrange the support of leading men throughout the country, for it is felt that the question of general principle must essentially be waived on this occasion. The purchase of the dirigible is to follow upon a series of tests deemed necessary alike by the experts of the War Office and by the representative committee which the *Morning Post* has got to act on its behalf, and which, in addition to having such eminent men as Earl Roberts, Viscount Milner, and Lord Charles Beresford, as representing martial patriotism, statesmanship, and sea-faring supremacy, has the chief executive officers of the three recognised aeronautical bodies of the United Kingdom, namely, Mr. E. P. Frost, President of the Aeronautical Society of Great Britain; Mr. Roger W. Wallace, K.C., Chairman of the Aero Club of the United Kingdom; and Colonel H. S. Massy, C.B., President of the Aerial League of the British Empire. Added to this, Mr. Arthur Du Cros, M.P., Secretary of the Parliamentary Aerial Defence Committee, has, among many others, proven his sense of the urgency of putting the nation into possession of a practical dirigible at the earliest possible moment, by contributing the generous sum of 100 guineas to the fund that is being raised. Nor is that all, for on Tuesday the *Daily Mail* announced its willingness to provide a sum of no less than £5,000 towards the cost of building a suitable hall in which to house another projected airship of which we are now about to speak.

During the week, plentiful evidence has been brought forward that there is absolutely no scarcity of airships, if one might use such a phrase. The Parliamentary Committee, which has been working in secret, has secured, through Mr. Arthur Du Cros, an option on the latest Clement dirigible, with which it is hoped to make a flight from Paris to London in August. There is to be no compulsion as to the purchase of that particular machine, but it is the intention to put it publicly through a series of manoeuvres which will alike demonstrate the practical utility of the machine and educate the public to the need that Britain is in of being equipped in a manner suitable to cope with the air vessels that are possessed by foreign Governments. All this is to the good. It is the object of *FLIGHT* to promote all schools of aerial development, and to see Britain taking that position in regard to the new science, industry, and means of national defence, which it is fitting she should occupy. Hence, too, it is good news to have made public during this very memorable week that there is actually being built in Britain, under Government auspices, a dirigible of the rigid or Zeppelin type. There is reason to believe that this vessel is being constructed at Barrow-in-Furness, also that it will be ready for its preliminary trials at no distant date, for it is intended that the machine should fly over various parts of the United Kingdom for a considerable period before the coming of what one might call the stormy season. The War Office is, moreover, pushing forward the business of erecting a gigantic balloon hall, suitable for housing the largest type of dirigible yet built, and Mr. Asquith has already given his assurance that if the right class of vessel is available, the necessary funds will not be lacking. How much of

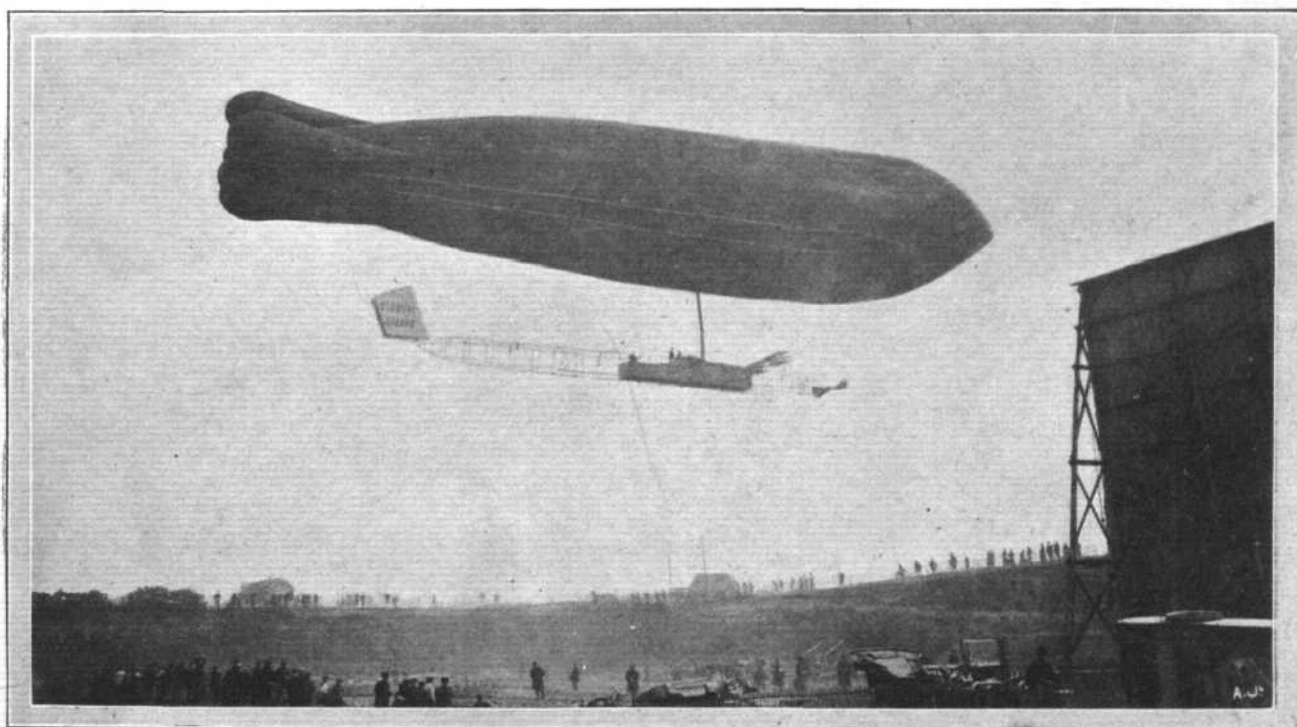


this is due to the determination which has been displayed during the week on behalf of the British public it is hard to say. All that concerns us, and all that concerns all true patriots, is that we are now assured that a practical beginning will be made within almost a matter of weeks, and certainly within three months at most.

We are well aware that to talk of individuals interested in flight is to run a grave risk of giving offence, because personal opinion is apt to run high as to whether the heavier-than-air or the lighter-than-air machine is "the thing to go for." For ourselves, we hold no brief for one to the exclusion of the other. On the contrary, we are the advocates of both branches of development, and it is gratifying to us to note, too, that even the daily Press is being raised to such a pitch as to recognise that the situation nowadays is not "Shall we develop one to the exclusion of the other?" but "Let us develop both kinds to the utmost of our ability, in order that an end may be put to speculation, and realisation may begin."

In making its appeal, the *Morning Post* pointed out that the question of the moment was not a matter as to whether it was desirable to encourage aeroplanes, for example, at the expense of dirigible balloons, or the other way about. The sole aim is to see Britain taking a leading place in the matter of aerial efficiency for national uses. Therefore the thing that has been needed, and is now being done, is to focus public opinion on the problem and to make a start with a practical airship which shall cause the people of this country to think. The Duke of Argyll observed that the kindest thing that Germany could do for us would be to send over some of her huge airships and let London wake one morning to find them hovering over the Bank of England. Happily the patriotic steps that are now being taken appear likely to ensure that that will not be necessary, because in place of an airship owned by a foreign Government, we ought to be able to get such an object-lesson with airships possessed by our own Army.

From the point of view of FLIGHT, nothing could be more admirable than the progress that has been made this week, in that it is one thing for a section of the community to be interested in the great science and industry which we have at heart, and it is another thing for circumstances to continue to rivet the attention of all classes in the country on the importance of the matter which we have so strenuously and consistently urged. It is a lucky thing for our movement, and one calculated to send it forward by leaps and bounds. When things happen abroad, we are apt to regard them more as in the nature of romances, but when in the place of written accounts of what is being done in the aeronautical world, our own people will be able to raise their eyes and see a vast dirigible vessel floating in the air, even the least imaginative among us is furnished with evidence that admits of no dispute, and which we can be sure will cause hundreds of thousands of citizens of the United Kingdom to go to their homes and ponder seriously concerning what these new possibilities mean to us as a nation, either if they are neglected, or if we avail ourselves of them to the utmost. So soon as this grand work shall have been accomplished (and we gladly allow that, in the nature of it, it is one that cannot be done without the assistance of the great daily organs like the *Morning Post*, which took the initiative in the matter, and which has been so admirably seconded by the wholesale attention with which other newspapers are now devoting to the subject), there will be no longer any doubt as to Britain's ultimately taking that position in the matter of aerial equipment which as a nation it is due she should occupy. That is the work of patriotism which we applaud. Therefore, we heartily urge all interested in the matter, either from the patriotic or the purely scientific, or even industrial, point of view, to contribute to the Hon. Sec. of the National Airship Fund (346, Strand, W.C.) to what extent may be in their power.



**AIRSHIPS FOR THE NATION.**—A general view of "Clement-Bayard No. I" just starting on its maiden voyage from Sartrouville to Paris, on October 30th last year. It then carried seven people, and attained a speed of 50 kiloms. per hour. "Clement-Bayard II," the new airship which the British Parliamentary Committee are bringing to England, is to be twice this size.

## AIRSHIPS FOR THE NATION.

IN connection with the combined efforts of the *Morning Post*, *Daily Mail*, and the Parliamentary Aerial Defence Committee to provide the nation with the beginning, at least, of a fleet of airships, we summarise the chief items of the information which has been made public regarding the projects in hand.

The new Clement-Bayard airship, on which the Parliamentary Committee has secured a month's option, is to be about twice the size of its predecessor. According to Mr. Arthur Du Cros, M.P., the Secretary of the Committee, the length of the envelope will be 300 ft., and the cubic capacity about 227,500 cub. ft. This should provide for the carrying of twenty-five passengers, but during the trip which it is proposed to make from Paris to London probably only six will be on board, consisting of M. Clement, Mr. Arthur Du Cros, and the crew of four. This, however, is not definitely settled, except so far as relates to the crew, which will include the pilot, two helmsmen—one for the elevating planes and one for the rudder—and the engineer. Instead of a single engine and propeller, as in "Clement-Bayard No. 1," the new vessel will have two propellers, one on each side of the hull, and each will be driven by a motor of 220-h.p. Sufficient petrol can be carried to enable the airship to travel 700 miles, and it is capable of ascending to a height of 6,000 ft. The vessel is still only in sections, but the work of completing her is being pushed on as fast as possible, and it is hoped that she will be ready to make the trip to London at the end of August. Since he made his first trip in the original airship last October, it has been a cherished wish of M. Clement to be the first man to visit London from abroad by airship. Although he had not contemplated remaining with his vessel in Great Britain for more than a few days, in view of the offer of the proprietors of the *Daily Mail* to provide a shed for the accommodation of the airship, he has readily acquiesced in the suggestion that he should remain for a month, so as to give as great an opportunity as possible for Members of Parliament and

Government officials to make themselves thoroughly acquainted with its possibilities. On one day, too, the general public will be enabled to see the airship, for the Aerial League have arranged with Mr. Arthur Du Cros to have it on exhibition for that period.

With regard to the shed for the airship, towards the cost of which the *Daily Mail* have so generously supplied £5,000, Mr. Herbert Ellis has been entrusted with the work of designing it, and he has visited France in order to make himself acquainted with the sheds already erected there. M. Clement's own shed is constructed of galvanized iron lined with cork, so as to keep the temperature fairly even both in summer and winter. He suggests that the dimensions of the building should be 300 ft. long, 90 ft. high, and 75 ft. wide.

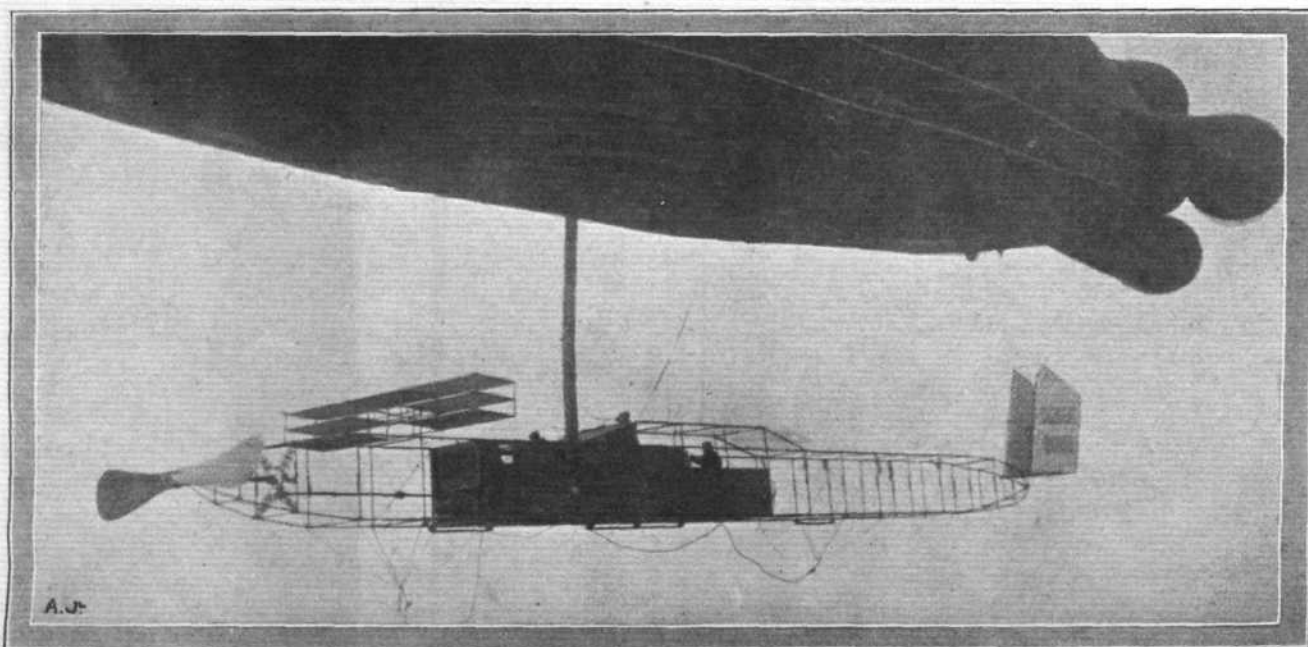
With regard to a site for the shed, the War Office have had under consideration the question of providing this, and both Farnborough and Salisbury Plain have been suggested as possible locations, but it is hoped that a suitable piece of land may be obtained nearer London.

### Parliamentary Aerial Defence Committee.

In view of the prominent part which is being played by it in these negotiations, we publish below a list of the members which constitute the Parliamentary Aerial Defence Committee:—

Mr. Arthur Lee (*Chairman*).  
Mr. Arthur du Cros (*Hon. Secretary*).  
Mr. W. P. Beale.  
Mr. J. Henniker-Heaton.  
Mr. E. C. Meysey-Thompson.  
Mr. E. A. Ridsdale.  
Sir H. S. Randles.  
Mr. Cecil Harmsworth.  
Sir John Batty Tuke.  
Mr. B. S. Straus.  
Sir Robert Hobart.  
Mr. H. Staveley-Hill.  
Mr. H. Pike-Pease.  
Hon. Claude Hay.

Major Anstruther-Gray.  
Mr. H. W. Cowan.  
Mr. E. H. Carlile.  
Hon. Rupert Guinness.  
Captain P. A. Clive.  
Mr. W. H. Lever.  
Captain James Craig.  
Mr. J. F. Remnant.  
Mr. G. A. Gibbs.  
Mr. E. Parkes.  
Mr. R. C. Lehmann.  
Mr. J. D. Rees.  
Sir Gilbert Parker.  
Hon. Arthur Stanley.  
Sir Henry Norman.



AIRSHIPS FOR THE NATION.—A nearer view of the car of "Clement-Bayard No. 1," showing the arrangement of the propeller and steering planes. The new airship will have two propellers, driven by separate motors, and arranged on each side of the car.



## ARMY AERONAUTICS.

THE EARLY STRUGGLE FOR EXISTENCE.—By A MILITARY EXPERT.

THE visit which His Majesty paid to the balloon factory at Aldershot recently marked a red-letter day in the history of British military aeronautics, for it was the first occasion that the balloon section of Royal Engineers have been honoured by an inspection by the Sovereign. Years ago the Prince of Wales went down to Sir Hiram Maxim's work and actually took a short gliding trip on that inventor's ponderous steam aeroplane, but that is hardly the same thing. The Royal recognition is all the more gratifying as the Aldershot authorities have recently been the recipients of a great deal of abuse, coming chiefly from the uninitiated, accusing them of being behind their Continental rivals. The public are apt to forget that whatever advantage foreign powers may have gained has come from private sources and financed by money found outside the usual grant of their respective Treasuries. Few people are aware of the steady up-hill fight against every adverse circumstance and official discouragement through which the Engineers have fought their way to their present position.

The proposal to introduce a balloon equipment for reconnoitring purposes was first made by Lieut. Grover in 1863, who died as Colonel Grover in 1893. This officer read a paper upon the subject at Chatham on April 23rd, 1863, entitled "On the uses of balloons in military operations." The essay was an excellent resumé of the history of the balloon up to that year and the advantages that would accrue from a further development. In view of the present sizes it is interesting to note what were considered the essential dimensions in those days. The material it was proposed to use was silk, and the body was to be 28 feet in diameter with a lifting power sufficient to raise two men to the desired altitude. At any rate the reading of the essay had the effect of rousing the War Office of that day, for one of Mr. Coxwell's balloons was hired and taken to Aldershot, and after being fitted with coal gas was experimented with at a height of 1,200 feet. But alas, with that fatal lethargy which seems to have been peculiar to so many generations of War Offices, the experiments languished and were finally dropped, leaving the work to be carried on by a few enthusiastic officers at their own expense.

But an event of European importance brought the matter up again with the abruptness of a Jack-in-the-box. This was the Franco-German War of 1870-71. Everyone is familiar with the success of the French in avoiding the cordon of investing Germans around besieged Paris by means of balloons. A Royal Engineers committee was constituted to consider the matter, and the chief points for their consideration were the nature of the apparatus most suitable for producing hydrogen in the field and the nature of the material to be used for the balloon envelope. As this is not a scientific article we need not enter into the details of their deliberations, but the first experiments of using a fire-clay retort were found unsatisfactory, and wrought-iron tubes were substituted, with good results. Next, Sir Frederick Abel, the eminent scientist, advised that silk, covered with unvulcanized indiarubber, would be most durable.

Having come to these conclusions, practical work was commenced and a furnace was erected at Woolwich Dockyard. In the meantime the Ashantee War broke out and the Balloon Committee, anxious to prove the use of the balloon, decided, without waiting for the completion of their own equipment, to enter into

negotiations with Mr. Coxwell for the supply of a complete balloon equipment for the sum of £1,200. But the difficulties of transport on the Gold Coast had been overlooked. To have carried sulphuric acid and zinc through the dense bush in packages of 80 lbs. each, which was necessary, would so have increased the cost that each ascent would have worked out at £2,400! This would have courted failure, and the sub-committee knowing full well that failure meant the abandonment of aeronautics by the War Office, the scheme was quickly dropped like a piece of red hot coal.

For the next few years matters remained in the committee stage and seemed to have every indication of remaining in that moribund state, but in 1878 a change came over the scene with startling suddenness. A young Militia officer of the King's Royal Rifles who had been giving a great deal of attention to the subject appeared upon the scene. This was none other than Capt. Templer, better known afterwards as Colonel Templer, Superintendent of the Aldershot Balloon Factory, and it is to his efforts that the British public have to thank that it ever entered into the arena of aeronautics at the period which it did. To commence with, Captain Templer was an enthusiastic aeronaut, and Sir Frederick Abel suggested he should offer his services to the War Office, which he accordingly did, with the result that he was given a grant of £150 with which to build a small balloon. People sneer at the stinginess of the grant which the Government give the Aldershot factory at the present day. Ye gods, just think how far Captain Templer made his grant go. In the place of the £1,200 which I have mentioned as having been required by Mr. Coxwell, Captain Templer not only built his first War Office balloon "The Pioneer" for £71 but made it so that it did the work required of it. In addition to this, Captain Templer gave instructions to parties of Engineer officers in his own private balloon "The Crusader," and how generously this grateful country rewarded this energetic officer. He was granted a remuneration of ten shillings a day. So that sixteen years after young Lieut. Grover's first proposal, the British Army had actually got a working balloon of its own. Isn't it typical?

Now came the opportunity of proving the practicability of these experiments. The Egyptian War of 1882 broke out, but the chance was lost. Had Sir Gerald Graham possessed a balloon detachment at Kassassin, the whole of the Egyptian position at Tel-el-Kebir would have been laid out like a map. There was one position of which the British forces were ignorant and that was the presence of a powerful eight-gun battery, and the left flank of the British advance passed quite close to it during the night advance. Had the Egyptians been aware of the nearness of our troops and opened fire the story of Magersfontein might have had an Egyptian predecessor, for it was curiously enough the Highland Brigade who were in such deadly peril.

But this is digressing. Captain Templer went steadily on, and the experimental work was transferred from Woolwich to the famous School of Military Engineering at Chatham, and the scope of the work was considerably enlarged, particularly in training the officers and men in observation and signalling; and an attempt was made to get a detachment attached to the Nile Expeditionary Force to rescue the beleaguered Gordon in Khartoum. But it was not to be. Before the plans could be matured

the Bechuanaland War broke out, and the detachment intended for the Soudan was sent, under Sir Charles Warren, to the Western Transvaal. There were three balloons with two officers and ten men. The whole equipment survived its sea and rough land journey, and curiously enough the first ascent was made by a balloon named "The Spy," at Mafeking. Could that balloon have seen what would have been happening at the same place fifteen years afterwards what a warning it could have given. But the following year, 1885, the balloon section began to show its real value.

It was found in Bechuanaland that ten men were insufficient, and this time Templer, now Major, was in charge. He had with him three balloons, "The Scout," "The Sapper" and "The Fly," and the chief gain in this expedition was that the troops felt more confidence in marching, knowing they could not be surprised. On the return from the Soudan the work of increasing the *matériel* and the strength of the detachment proceeded rapidly, and the men were sent to the Artillery ground at Lydd to observe the effect of artillery fire and in addition to ascertain if artillery could hit a balloon. The report of the Ordnance Committee was strongly in favour of the balloon, particularly as it was ascertained that the latter was safe from gun fire at a range of 3,000 yards. But still more practice was desirable, and once more the energetic Templer stepped into the breach. We find him hiring land at his own expense near Chatham and forming a balloon camp, and he at last got his well-deserved reward by being appointed to the post of Instructor of Ballooning

at a salary of £600 per annum. In view of the many rebuffs and disappointments he subsequently received at the hands of the War Office I often wonder whether Colonel Templer recollects that he was gazetted to this post on April 1st.

The work then slowly and steadily improved. In 1890 the Government actually granted the sum of £9,000 to build a proper factory, and then came the question of a site, and finally the position selected was a piece of land adjoining the Royal Engineers' lines at Aldershot. The next nine years is merely the story of continued progress, and the crowning test came with the South African War. This is such recent history that I need hardly recapitulate it except to mention that it was the balloon detachment which located the position of Cronje at Paardeburg.

I trust the foregoing will in some measure show that it is not the British officer who has been the cause of our backwardness and that the blame must be laid on the administrative side. It has been my good fortune to be one of the few individuals who have been inside the British, French, German and Russian balloon establishments, and if I may add to that, that I have been in both balloons and airships, and I trust this year to add aeroplaning to these experiences. I trust I may be allowed to conclude this article with the remark that I feel certain that the Engineer officers at Aldershot, if given the opportunity, will equal, if not surpass their rivals. It remains for the British public to see that they have the opportunity. Let it be done.



Photo by Dr. W. J. S. Lockyer.

Roehampton and Wimbledon Common, viewed from the "Corona" balloon at an altitude of 2,300 ft. on June 29th, 1908.



## "ZEPPELIN II," LONG VOYAGE, OFFICIAL REPORT.

IN the *Berlin Imperial Gazette* of the 21st inst., Count Zeppelin gives a very lucid account of his famous 38 hours' voyage in "Zeppelin II," which resulted in semi-disaster, attributed to the careless steering of the helmsman. Count Zeppelin commences by stating that his object was to prove that the new airship, constructed with funds supplied by public subscription to replace its predecessor, which was destroyed at Echterdingen, possessed all the qualities which he attributed to it. The crew, he says, consisted of eight men, and benzine and oil sufficient to keep the two motors working for thirty-four hours was taken on board. He selected the direction of Berlin in order to show that he was in a position to travel that distance at any time, and also because in the event of his having to land he could reckon on the assistance of the Balloon Battalion. He kept his project secret so that in the case of failure it might not seem that the enterprise was unsuccessful, and also in order to avoid disappointing the people who might be awaiting his arrival. Rain was falling when he made his preliminary ascent on May 28th, and he manœuvred over Lake Constance for three-quarters of an hour, where it fell heaviest, to ascertain the effect on the gasholder. The water ultimately penetrated the covering and fell into the cars and increased the weight to such an extent that ballast had to be thrown out.

When he started for his long trip on the evening of May 29th rain was again falling, and unfortunately the astronomical instruments required for the journey had not arrived. The loss of weight resulting from the use of benzine in the motors and the effect of the sun's rays on the gas made it desirable to obtain a fresh supply of water ballast by letting buckets down into the Dutzendteich, near Nuremberg, but so many boats were on the water that this could not be accomplished. Between Leipzig and Bitterfeld it was considered advisable to return in order to obviate the necessity for landing for a fresh supply of benzine. Berlin could not in any case have reached until late at night. After telegrams had been dropped at Bitterfeld and the return voyage commenced darkness prevented Count Zeppelin from ascertaining his position, and with one motor working he travelled slowly in wide circles for five hours.

At daybreak he discovered that the airship was over Schweinfurt, and a course over Würzburg, Heilbronn,

Stuttgart, Ulm, and Friedrichshafen was decided upon. He chose this route because he knew of several places on the way where, if necessary, he could land to obtain fresh supplies of benzine and oil. It seemed probable that home could be reached with both motors working, but on the other side of Stuttgart such a strong head wind was encountered that it was decided to renew the stock of benzine and oil at Göppingen. In attempting to reach a very favourable landing-place on a flat piece of ground the steersman, who was attempting to describe a large curve, allowed the airship to be driven into a valley, and, instead of turning round and leaving the valley where he entered it, he directed the airship over a hill. Owing to the circumstance that the airship was travelling against the wind it could not be raised sufficiently high quickly enough, and being, moreover, caught over the hillside in a downward current of air it could not be prevented from running into a tree. The rigid framework of the balloon saved the crew and the machinery from the effects of the collision, but it was bent as far as the first car, the cover was torn off, and the front gas cells were destroyed.

When the mishap occurred the balloon had been in the air for thirty-nine hours and had not lost a cubic metre of gas or a litre of water ballast; so that if benzine and oil had been obtained at Göppingen the "Zeppelin II" would have been ready to start afresh on an equally long voyage. The airship was provisionally repaired, but, owing to the fact that several gas cells were wanting its carrying power was reduced. The front motor was therefore removed, and the engineer, Herr Duerr, who now assumed command, could take only four men with him.

Against a head wind, which at times was rather strong, with a blunt bow and with only one motor, the airship proceeded slowly. It was permitted to rise as the sun's rays affected it. When it reached the height of 4,000 ft. much gas was lost, and a second landing became imperative at half-past eight, when the air became considerably cooler. Everything of weight that could possibly be dispensed with was thrown out, and fresh benzine and oil for the motors having been obtained from motor cars the voyage to Friedrichshafen was completed without a new supply of gas.

## INCORPORATION OF THE LADIES' BRANCH OF THE AERIAL LEAGUE.

### PATRIOTIC ELOQUENCE FROM A LADY.

To mark the incorporation of the Ladies' Branch of the Aerial League of the British Empire, a dinner was given at the Lyceum Club on Monday evening last, when the outstanding feature of an occasion that may well prove auspicious in the annals of the aeronautic movement, was a particularly brilliant speech delivered by Mrs. Eric Stuart Bruce, when proposing the toast of the League and of "Aerial Navigation." This speech was rendered especially memorable by the extremely eloquent manner in which all the various points were impressed by Mrs. Bruce upon her hearers, while the evident keenness with which the subject of aeronautic progress is being followed by an influential section of the fair sex was well reflected throughout the entire context. Mrs. Bruce said:—

"In considering the vast subject of aerial navigation from our own standpoint—all there is time for to-night—two facts strike the imagination; one is, that other nations have airships that pass and repass, while we have none, or next to none; and the other fact is, the curious attitude of the British people about it all. We are actually diffident.

"We are all saying, 'We have done nothing over here, we are doing nothing.' Diffidence is a fault or virtue unknown to Britons in the opinion of their Continental neighbours. If our attitude continued, we should present an aspect so strange to them that they would find us unrecognisable, and there is no doubt we are a great deal too diffident just now about our work in aerial navigation.

"Most of the fundamental principles of the heavier-than-air systems, which everyone recognises will be the final solution of aerial navigation, have been elucidated by Britons. For instance, superposed surfaces which are embodied in the aeroplane of the Brothers Wright, were proposed by Wenham in this country, and to some extent experimented by him as long ago as 1866; the investigation of the upper air, now done all the world over, and which has such an important bearing on aerial navigation, was initiated by Glaisher. In more modern times Great Britain has still been to the fore with the best material for airship construction in her specially-prepared goldbeater's skin envelope. The method of compressing and storing gas in steel cylinders for filling balloons—the speediest method—was devised and developed in this country, and the production of hydrogen by electrolysis, though perhaps first forecasted in France, has been brought to a high state of efficiency over here. Multiple examples of the development of principles for the heavier-than-air in this country might also be cited. Thus it becomes evident that what has happened has been this:—

"Being a practical people, we early recognised that the final word in aerial navigation must be the heavier-than-air; consequently we directed our efforts to elucidating its principles; we did not trouble about the navigable balloon or airship because we saw its limitations, and that it was a phase; consequently, again, we undervalued its use as a temporary expedient, and other nations less practical and foreseeing have not done so. Now we realise that for political and patriotic, if not for

scientific purposes, we must be content for a time with an imperfect instrument and must develop it as our neighbours have done. Now we see that the aluminium-cased 17 balloons of a Zeppelin may work havoc and devastation, that the perhaps more engineeringly perfect, though smaller, Lebaudy could scan, carry, and speak news of stupendous import.

"These have been developed by paternal Governments. We do not favour paternal Governments here—they are cold as charity; rightly or wrongly we find more elasticity and spontaneous action in private enterprise. And it is here that the Aerial League comes in to help our country in her hour of need.

"The Aerial League is the consolidation of British effort at the right moment. Just now other nations, favoured in difficult initial experiments by climatic conditions, have made a temporary spurt. One is not exaggerating much in saying in England that the weather is always against us in aerial navigation. But a British orator has told us that 'a difficulty is a thing to be overcome.'

"Those enlightened men, Colonel Massy and his fellow workers in the Aerial League, seeing the achievements of isolated Britons in the science and practice of aerial navigation, have logically discerned what great results would accrue from organised, directed patriotic endeavour. They have come forward to gather, to mould, to lead the aspirations of those who wish to see Great Britain—and do we not all wish it?—Queen of the Air as well as Ruler of the Seas!"

## AERO CLUB OF THE UNITED KINGDOM.

### OFFICIAL NOTICES TO MEMBERS.

#### Fixtures for 1909.

June 26	...	Sailor-Aeronaut Race, "Enchantress," Netley, Southampton.
July 10	...	Balloon Race, Hurlingham Club (Challenge Cup presented by Mr. F. Hedges Butler).
July 17	...	"Hare and Hounds" Balloon Race, Hurlingham Club (Cup presented by the Hon. C. S. Rolls).
August 28	...	Gordon-Bennett Aviation Cup, Rheims.
October 3	...	Gordon-Bennett Balloon Race, Zurich.

#### Committee Meeting.

A meeting of the Committee was held on Tuesday, the 22nd inst., when there were present: Mr. Roger W. Wallace, K.C., in the chair, Mr. Griffith Brewer, Mr. Ernest C. Bucknall, Major C. de W. Crookshank, R.E., Mr. John Dunville, Prof. A. K. Huntington, Mr. V. Ker-Seymer, Mr. F. K. McClean, Mr. J. T. C. Moore-Brabazon, Hon. C. S. Rolls, Mr. Stanley Spooner, H. E. Perrin (Secretary).

**New Members.**—The following new Members were elected:—

R. W. Anderson.	Miss V. Hargreaves.
Earl of Dundonald.	Mrs. Pattinson.
Lt.-Col. H. Goold-Adams, C.M.G.	Benjamin Travers.

#### Balloon Race at Hurlingham.

The race for the Hedges Butler Challenge Cup will take place at Hurlingham Club, Fulham, S.W., on Saturday, July 10th, 1909, at 3.30 p.m. Members desiring to compete are requested to advise the Secretary not later than 5 p.m. on Wednesday, July 7th, 1909. Entrance fee, 10s.

The following rules will govern the competition:—

1. The Cup will be awarded to such member (whether the aeronaut in charge or not) who performs the longest voyage in any

balloon, airship, or aeroplane (irrespective of weight and size) within the confines of Great Britain, on a date and from a place to be fixed annually by the Committee of the Aero Club.

2. The Cup will be held by the winner until the next competition. In the event of any member winning the Cup on three consecutive occasions, it will become his or her absolute property.

3. A competitor must not be accompanied by a professional aeronaut. The term "Professional Aeronaut" shall not be deemed to include officers connected with the military ballooning establishments of this or other countries.

4. A competing aerostat must be in charge of a member possessing the Club aeronaut's certificate, or a member who has made at least twelve ascents.

5. The distance must be covered in Great Britain only, *i.e.*, the crossing of the open sea (*e.g.*, the English Channel, Irish Sea, &c.), will not be permitted; this, however, need not be taken to apply to indentations in the British coast, such as a mouth of a river, &c.

6. To prevent a competitor landing too near the sea, the distance will be measured only up to within five miles from the point at which the line of direction taken from the starting point to the place of final descent permanently leaves the coast.

7. The words "longest voyage" in Rule 1 refer to the distance covered, measuring in a direct line from the place of ascent to the place of final descent, and do not refer to the time occupied by the journey.

8. Temporary descents not exceeding a total duration of 8 hours may be made and occupants may alight, but all must re-ascend. No additional gas or ballast may be taken in, except ballast to be used temporarily for the purpose of anchoring the aerostat.

9. A proper anchor, anchor rope, and trail rope must be taken, and may not be dispensed with at any time.

10. Competitors are required on landing to properly fill in a landing certificate, which must be obtained from the Secretary beforehand, and this certificate should contain such full particulars as will enable the Committee to easily locate on an ordnance map of half an inch to a mile the exact point at which the final descent was made.

The landing certificate must be signed as correct by the competitor and others (if any) accompanying him, and two responsible persons present at the time of the final descent, and must be sent in to the Secretary within seven days.



11. Competing aerostats may not be dragged, except at the final descent for convenience in packing; in the latter case the distance for the purpose of the competition will be measured only up to the point at which such dragging commenced.

12. The order of starting shall be decided by lot.

13. The holder of the Cup for the time being shall be responsible to the Club for £105, the value of the Cup.

14. A competitor by entering agrees to be bound by these rules, and a competitor who does not strictly comply with the rules will be liable to disqualification.

15. The decision of the Committee of the Aero Club of the United Kingdom in all matters of dispute, or as to the interpretation of these rules, will be final.

### Rheims Week.

The following programme has been arranged for the Rheims week:—

*Sunday, August 22nd.*—French Selection Trials for the Aeroplane Gordon-Bennett, Circuit Prize (first day), Grand Prix of the Champagne and the City of Rheims (first day), Dirigibles' Prize (first day).

*Monday, August 23rd.*—Circuit Prize (second day), Speed Trials (first day), Dirigibles' Prize (second day), Passengers' Prize.

*Tuesday, August 24th.*—Circuit Prize (third day), Dirigibles' Prize (third day).

*Wednesday, August 25th.*—Grand Prix of the Champagne (second day), Dirigibles' Prize (fourth day), Circuit Prize (fourth day).

*Thursday, August 26th.*—Landing competition for ordinary Balloons, Dirigibles' Prize (fifth day), Circuit Prize (fifth day).

*Friday, August 27th.*—Grand Prix (third day), Circuit and Dirigibles' Prizes (sixth day).

*Saturday, August 28th.*—Gordon-Bennett Cup Contest, Dirigibles' and Circuit Prizes (seventh day).

*Sunday, August 29th.*—Speed Trials (second day), Dirigibles' and Circuit Prizes (eighth day), Height Prize.

The rules governing the various competitions can be had on application to the Secretary of the Aero Club. Entries close on July 22nd.

The Aero Club have entered for the Gordon-Bennett Aviation Cup, which takes place on Saturday, August 28th, and many members have already arranged to be present for the Rheims week.

If a sufficient number are going over, special arrangements can be made with the Railway Companies. Members are therefore requested to notify the Secretary as soon as possible if it is their intention to be present. Full details will be announced at a later date.

### Models at the Travel Exhibition.

A Model Section is being organised at the Travel Exhibition to be held at Olympia in July next, and the Aerial League of the British Empire will present gold, silver and bronze medals for the best working flying models, whether of the heavier-than-air or lighter-than-air type. The competition is open to British subjects, and in awarding the medals, general excellence and not necessarily the longest flight will be taken into consideration. Exhibitors are requested to notify the Secretary of the Aero Club if they wish to compete.

### Shellbeach Flying Ground.

**Erection of Sheds.**—Members wishing to erect their own sheds at Shellbeach are requested to apply to the Secretary, who will supply all information.

**Railway Arrangements.**—The following reduced fares have been arranged with the railway company for members visiting Shellbeach:—

1st Class Return	2nd Class Return	3rd Class Return
8s.	6s. 6d.	5s.

These tickets will be available for one month from date of issue. Members desiring to avail themselves of these reduced fares are required to produce vouchers at the booking offices. Vouchers can be obtained from the

Secretary of the Aero Club. Trains leave Victoria, Holborn, or St. Paul's.

For the convenience of members, the best train is the 9.45 a.m. from Victoria, arriving at Queenborough 10.55. At Queenborough change to the Sheppey Light Railway for Leysdown (Shellbeach), which is  $\frac{3}{4}$ -mile from the flying ground.

The Club House, Muscle Manor, is now open to members, and refreshments can be obtained there. Until the ground is being regularly used it is, however, advisable to send a telegram so that arrangements may be made. Telegrams should be addressed "Aero Club, Shellbeach, Eastchurch."

Members proposing to visit the Aero Club flying ground at Shellbeach are reminded that access to the aeroplane sheds or works can only be obtained with the consent of the owners of the flying machines.

### Gordon-Bennett Balloon Race, Zurich, October 3rd, 1909.

Mr. James Gordon-Bennett has informed the Aero Club of Switzerland that he will again present £500 to the winner, as a proof of his friendship for Switzerland.

The Aero Club of the United Kingdom will be represented by one balloon in this race, which takes place at Zurich on October 3rd, 1909.

### Aero Club Balloon.

The Aero Club balloon, "Aero Club IV," can be hired by members at a fee of £2 2s. The balloon is at the grounds of the Club Aeronautical Engineers, Short Bros., Queen's Circus, Queen's Road, Battersea Park, S.W., to whom application should be made.

### Balloon Ascents.

The following ascents have been made by members of the Aero Club during the last ten days from Messrs. Short Bros.' grounds at Battersea:—

Sunday, June 13th, "Banshee." John Dunville, Capt. B. Corbet, C. Goetz, and Mr. Whitburn.

Sunday, June 13th, "Satellite." A. M. Singer and C. F. Pollock.

Sunday, June 13th, "Continental." Hon. Mrs. Assheton Harbord, Hon. C. S. Rolls, Capt. V. C. de Crespigny, and Lady Westmacott.

Sunday, June 13th, "Corona." F. K. McClean and Dr. W. J. S. Lockyer.

Tuesday, June 15th, "Continental." C. F. Pollock and A. M. Singer (night ascent).

Wednesday, June 16th, "Kismet." Philip Gardner and John Dunville.

Thursday, June 17th, "Continental." A. M. Singer, C. F. Pollock, and Mrs. Singer.

Friday, June 18th, "L'Esperance." Hon. C. S. Rolls, Baroness von Heeckeren, Capt. V. C. de Crespigny, and Hon. Mrs. Assheton Harbord.

Saturday, June 19th, "Valkyrie." Hon. Mrs. Assheton Harbord, John Dunville, C. F. Pollock, Col. the Hon. G. Napier, and Admiral of the Fleet Sir E. Seymour.

Saturday, June 19th, "Aero Club IV." Hon. C. S. Rolls and A. M. Singer.

Monday, June 21st, "Aero Club IV." John Dunville and C. Goetz.

Monday, June 21st, "Satellite." A. M. Singer (solo ascent).

### Aero Club Monthly Dinners.

The monthly dinners are held at the Hotel Chatham, Regent Street, S.W., on the first Tuesday in each month, at 8 p.m. (5s. 6d. each). Members wishing to attend are requested to notify the Secretary at least two days beforehand. Evening dress optional.

HAROLD E. PERRIN, Secretary.

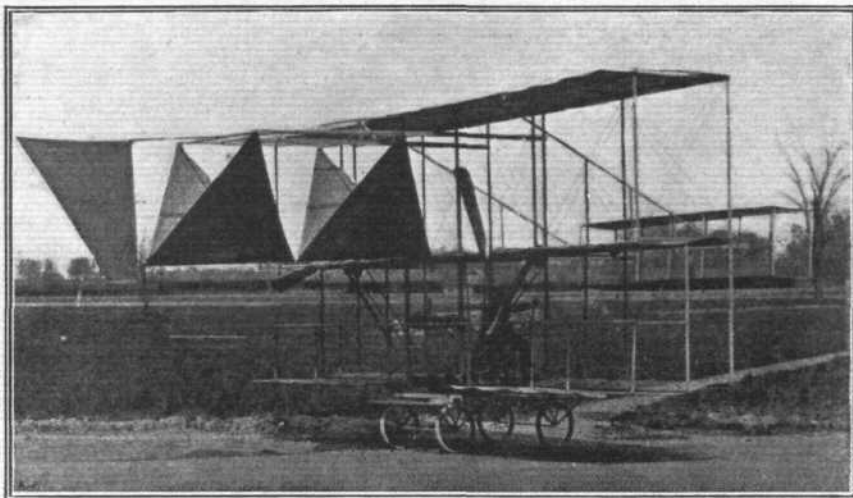
The Aero Club of the United Kingdom,  
166, Piccadilly, W.

## THE BOKOR TRIPLANE.

IN the accompanying photograph we illustrate the triplane with which Mr. Morris Bokor is experimenting at the American Aeronautic Society's grounds at Morris Park, New York. The three main planes measure 25 ft. from tip to tip, and are  $6\frac{1}{2}$  ft. wide, giving a lifting surface of 507 sq. ft. A further 70 sq. ft. are obtained from the horizontal rudder, the dimensions of which are 14 ft. by  $2\frac{1}{2}$  ft., while another addition is secured by the two planes which are mounted at a sharp dihedral angle behind the two upper main planes. The machine in going order with Mr. Bokor on board weighs 1,181 lbs. The middle main plane is placed 5 ft. above the lower one, while the top one is 6 ft. from the one below it.

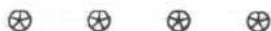
Two 8-ft. wooden propellers, of 11 ft. pitch, are driven by chains from the 4-cylinder 4-in. motor, the gear ratio being  $3\frac{1}{2}$  to 1. One special feature of the machine is that the aviator's seat is mounted on a pendulum, with the object of obtaining automatic stability. When the machine tips to one side or the other, the flexible rear edges of the main planes are warped by means of cables from the

pendulum. Since this photograph was taken, the machine has been mounted on skids, and for starting it



**BOKOR TRIPLANE.**—In this American design the double triangular-shaped tail and the swinging aviator's seat, which automatically warps the lower plane, are the main features.

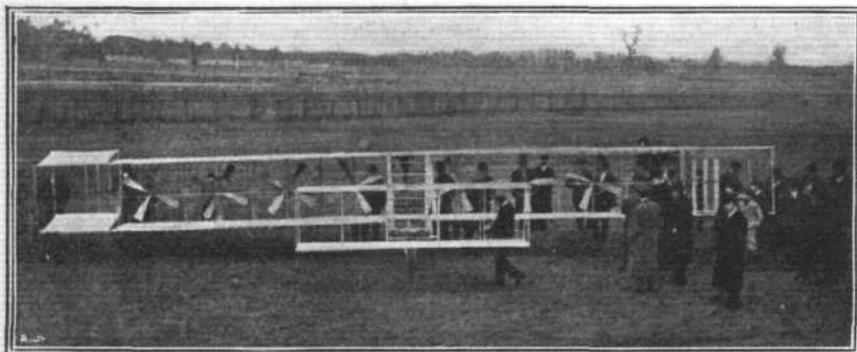
is mounted on a little four-wheeled truck, which is left behind when the machine rises in the air.



## THE KIMBALL AEROPLANE.

ANOTHER aeroplane with which experiments are being made at Morris Park is that of Mr. Wilbur M. Kimball,

the Secretary of the Society, to which we referred in our issue of April 10th. It is of the biplane type, and is peculiar for the fact that it has eight propellers, 3 ft. 10 in. in diam., arranged between the planes, as seen in our photograph. The drive is by wire rope  $\frac{1}{8}$  inch in diameter, and the propellers are arranged in two sets of four, which are driven at a speed of 1,600 revs. per minute by a 4-cylinder motor 4-in. bore 4-in. stroke. From tip to tip the wings have a spread of 37 ft., and are  $6\frac{1}{2}$  ft. wide, and placed 4 ft. 2 ins. apart. A special feature is the square tips 4 ft. by 4 ft., which are used for steering instead of flexing the wings. The planes of the elevator, which is fitted 9 ft. 9 ins. in advance of the main planes, measure 12 ft. by  $12\frac{1}{2}$  ft., the distance between the two surfaces being 3 ft.



**KIMBALL BIPLANE.**—Multiple propellers between the planes, and the steering tips at both ends of the main planes, are the notable features of this American machine.



## AERONAUTICS IN PARLIAMENT.

INTERROGATED by Mr. Fell in the House of Commons last week, Mr. McKenna said that the question of garages for dirigibles had received careful attention.

Plans and estimates had been considered and compared with similar garages abroad, and the question of sites was under review. It was not proposed at present to erect Admiralty shelters, but garages would be erected by the contractors.

In a printed reply to Mr. C. Harmsworth, Mr. Haldane said that particulars are now ready for obtaining tenders for the erection of a shed to house a large dirigible, and it is hoped to shortly place the order. It was at present

impossible to say when it was likely to be available for use.

With regard to funds for both Army and Navy, Mr. Asquith, in reply to Mr. Rees, said that as the requirements for the year could not be estimated precisely yet, he could not say more than that funds would be forthcoming to meet such requirements.

On being asked by Major Anstruther-Gray as to what steps had been taken to provide special guns for use against airships, and whether it was proposed to experiment with such guns mounted on motor chassis, Mr. Haldane said that the Ordnance Board was at present busy with this problem.



## NEWS OF THE WEEK.



M. Gabriel Voisin, the joint recipient with M. Bleriot of the Osiris Award from the Institute of France, in recognition of their aeroplane construction work.

#### Note to Our Readers.

ON the page devoted to the Official Notices of the Aero Club, our readers will find one or two items of general interest, notably some official information regarding the balloon race for the Hedges Butler Cup.

#### Cody Aeroplane Flies Again.

ON Friday of last week Mr. F. S. Cody, in the much-despised Army flyer, succeeded in beating all previous British records by flying for a distance of something between  $1\frac{1}{2}$  and 2 miles in a circle. After a run of about 100 yards along the ground, the machine rose into the air, and after flying for some distance at a height of about 15 feet, rose to about 30 feet and pursued an undulating course. Three times Mr. Cody showed that he could steer the machine, and he eventually brought it down close to his starting point. It appeared that Mr. Cody had well mastered the principles of steering a flyer, and he should now be able to make some longer flights. He is proposing to instal a larger engine in place of the present one of 50-h.p.

#### Wright Brothers' Movements.

ON Sunday last the Wright Brothers arrived at Fort Meyer, and are preparing to carry out the U.S. Government tests, for which they have been granted an extension of time up to July 28th. They, however, expect to make their flight a good deal before that date.

The first Wright flyer to be constructed in Germany has just been completed by the German Wright Flying Machine Co. at the military aeronautic quarters at Tegel, near Berlin, and the eleven others are nearing completion, so that they will be in readiness by the time the Wrights arrive, probably in August.

#### Aeroplane Records.

THE Commission Aérienne Mixte have now decided what performances with heavier-than-air flying machines they will recognise as constituting records. They are:

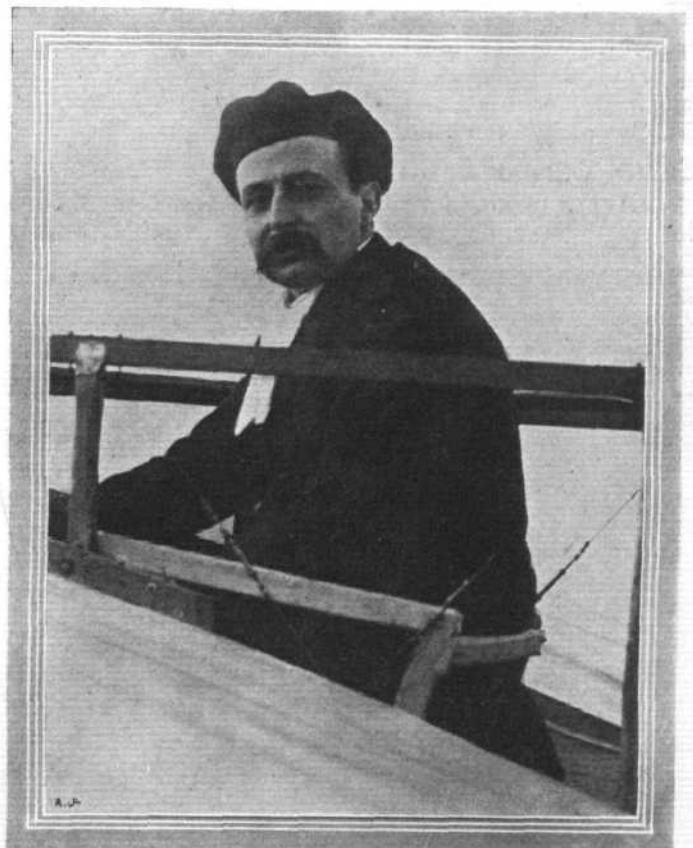
(1) longest distance; (2) longest duration; (3) best speed over 1, 2, 5, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 150, 200, 250, 300, 350, 400, 450, 500, 750, 1,000 kiloms., progressing by 250 kiloms. above 1,000; (4) best speed in  $\frac{1}{4}$ ,  $\frac{1}{2}$ , 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 15, 18, 21, 24 hours, and every 12 hours beyond 24. These records can be of three kinds: (a) made by machine carrying aviator alone; (b) machine carrying pilot and passenger; (c) according to number of passengers with pilot. They may be made over a closed circuit in an aerodrome, or outside an aerodrome in a straight line.

#### Mr. Latham at Chalons.

WINDS seem to have no terrors for Mr. Latham and his "Antoinette IV." Last Saturday he flew for about 34 minutes, and on the previous day he went up although there was a very high wind blowing. Mr. Latham had an exciting struggle with the elements, but he maintained his equilibrium, although in making one turn the wind caused him to make a wider sweep than he intended. In landing on Saturday he slightly damaged one of the wings, and when coming to earth after a shorter flight made earlier in the day he buckled one of the wheels, a small matter soon set right.

#### M. Bleriot at Issy.

HAVING mounted a new Anzani engine on his little monoplane, "No. XI," M. Bleriot had her out for a trial spin on Saturday and made a very good flight of 4 kiloms.



M. Bleriot, the fortunate recipient, jointly with M. Gabriel Voisin, of half the 100,000 francs Osiris Prize, which has been awarded to them by the French Institute in recognition of the work which they have accomplished by their construction of flying machines, as announced in our last issue.

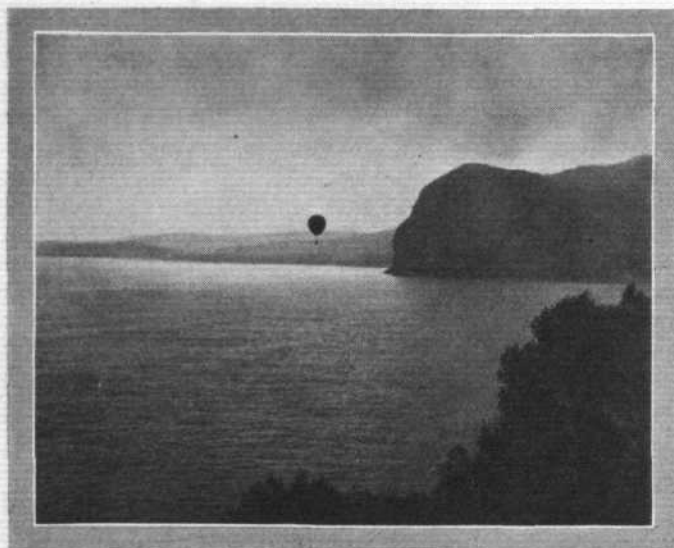


Photo by Hon. C. S. Rolls.

Mr. Mortimer Singer and Mr. Jacques Faure crossing the Bay of Beaulieu in the balloon seen in our other pictures.

This motor is very powerful and of high speed, and by its use M. Bleriot thinks that he could if necessary carry two passengers, even on this tiny monoplane, which has a lifting surface of only 14 sq. metres. On Monday evening, after the rain had ceased, M. Bleriot made a flight of about 6 mins., during which he demonstrated that he had complete control of the machine. The next day high winds and constant rain precluded any experimenting. At the end of the week M. Bleriot will be going to Douai, in order to get his "No. XII" in readiness for the competitions up to July 18th.

## Newcomers at Issy.

Two new machines have arrived at the Aero Club of France's enclosure at Issy, and should shortly be making their trials. One is a biplane belonging to M. Ogier while the other is the Obre aeroplane.

## Santos Dumont has a Tumble.

AFTER making several short flights about 500 metres in length at a height of 15 to 20 metres, M. Santos

Dumont met with an accident at Issy on Saturday last. By some means the longitudinal stability of the "Demoiselle" was interfered with, and the little flyer fell back on her tail. Santos Dumont escaped without injury, and although it was feared at first that the machine was seriously damaged, the worst was a damaged wheel. M. Santos Dumont left Issy on Tuesday, and his flyer has been packed up and sent to St. Cyr.

## Pluck or Foolhardiness?

VISITORS to Port Aviation on Sunday witnessed an exciting adventure on the part of a Russian Count. After witnessing several flights by Delagrange, he was fired with an ambition to immediately do likewise, and requested Delagrange to take him up. When this was refused Count Zarl Hedberg de Caurnet promptly purchased the machine, and although it was getting dark and his friends endeavoured to persuade him to wait till the morrow, he insisted on making an attempt to fly. After covering about 100 yards it is not very surprising

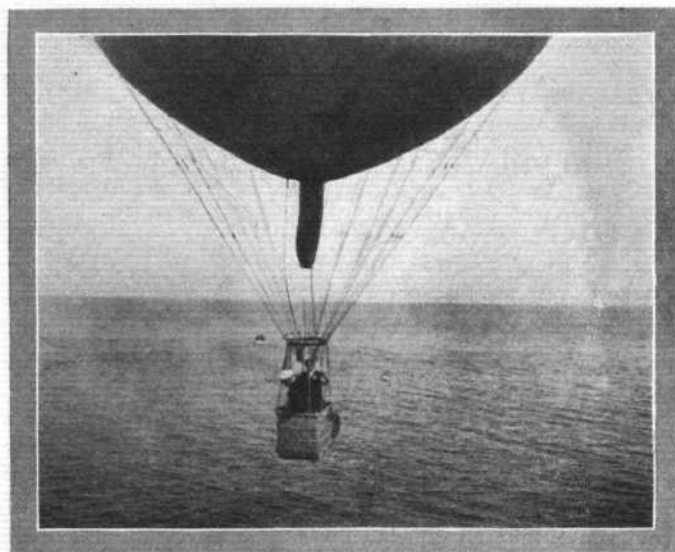


Photo by Hon. C. S. Rolls.

In the above photograph Mr. Mortimer Singer and Mr. Jacques Faure have just started off from Monte Carlo Quay. It will be noticed that the balloon has a downward lift, which nearly landed them in the sea.

that the Count apparently pulled the wrong lever, for the machine suddenly crashed to the earth and was badly smashed. The aviator escaped with nothing worse than a badly-bruised leg, which without any question of doubt may be called luck.

## Flyers at Juvisy.

SATURDAY evening last was quite a busy time at Port Aviation, Juvisy, for both M. Delagrange and Comte Lambert made some excellent flights. Delagrange was first aloft, and flew round the aerodrome twice in 3 mins. 50 secs., and on a second attempt he flew three times round the course in 3 mins. 55 secs. Then Comte Lambert, having repaired his Wright flyer, took it to the derrick and started off, making a flight lasting for 12 mins. 52 secs., during which he circled round the aerodrome eight times at a height of about 30 metres. He did not, however, confine himself to remaining over the flying ground, but made wide circles over the surrounding country.

## M. Legagneux in Denmark.

M. LEGAGNEUX is now in Denmark, with the object of demonstrating the art of flying in that country. He



Photo by Hon. C. S. Rolls.

**INFLATING A BALLOON AT MONTE CARLO.**—In this Mr. Mortimer Singer and Mr. Jacques Faure made several ascents recently over the Mediterranean, when Mr. C. S. Rolls was touring the Riviera on his Rolls-Royce, to whom we are indebted for the three photographs which we publish this week.



has a biplane at the Klampenborg Racecourse, close to Copenhagen, and day by day last week thousands of spectators, after having paid for admission, went away with free tickets for the next day's show, without having seen the flyer in the air owing to the high winds. They seemed to take their disappointment very patiently, and on Sunday two flights were made, of 900 and 600 metres. The next day, after several short flights, Legagneux made three and a half turns round the course, a distance of about 3 kiloms. in 4m. 25s.

#### Curtiss again Flies in America.

ON the 17th inst., at Morris Park, N.Y., Mr. Curtiss made a flight of half a mile at a speed of about 45 miles an hour.

#### Flight in Australia.

A TREMENDOUS amount of interest is being taken in flying matters by our Australian cousins, and an Aero League, under the patronage of the Governor-General, Lord Dudley, is already in full swing. Some Wright aeroplanes are on order, and their delivery is being very largely awaited, and it is hoped that before long Australia will be quite an active centre of aeronautical development.

#### French Military Dirigible Competition.

WITH a view to securing the best possible dirigible for the French Army, the Minister of War is organising a competition in which those who take part will be asked to submit designs for an airship of 6,500 cubic metres capacity, and giving a speed of 50 kiloms. an hour. A premium of 5,000 francs will be given to the designer of the scheme which is awarded first place. The Judges will be a commission of delegates from various automobile and aeronautical bodies in France, the *Chambre Syndicale de l'Automobile* being represented by one of their Vice-Presidents, M. Armand Peugeot.

#### An Aeroplane in the City.

AT the present time aeroplanes are not particularly easy things to handle, a fact which George Wells, of Kingston-on-Thames, found out to his cost the other day. He was conveying an aerial machine across London Bridge when the vigilant eye of a City policeman perceived that it projected beyond the back of the vehicle further than allowed by the City traffic regulations. This led to an appearance at the City Summons Court last week, when the defendant was fined half-a-crown and 3s. costs.

#### Fixing the Sex of the Dirigible.

IN view of the doubt which appears to obtain as to the naming of the French military dirigibles, the Minister of War has decided that in future they are to be given names of the feminine gender, and to make certain they will be painted on the envelopes. In future the "Liberté" and "République" will be known as "La Liberté" and "La République." The former is now almost ready for her trials, and the balloon has already been inflated.

#### Siemens-Schukert Dirigible.

THIS airship, of which we gave particulars in our issue of Jan. 16th last, is now nearing completion, and a shed for it is being erected at Biesdorf, in the vicinity of Berlin. This building, which is being built of iron and cement, measures 125 metres long, 30 wide, and stands 39 metres high. The balloon itself, it will be remembered, is 120 metres long, 14 metres in diameter, and has a cubic capacity of 13,000 cubic metres. It will have three passenger cars, and will be driven by four motors of 125-h.p. each.

#### Dirigibles for Austria.

IN addition to the airship of the Parseval type which has been ordered in Germany by the Austrian Government, it appears that a duplicate of the "Russie" has been ordered from the Lebaudy firm. Before the Parseval, which has a cubic capacity of 1,800 metres, will be accepted next October, it will be required to make two trips of 10 kiloms. out and home in a given time, a trip of 240 kiloms. to a predetermined point against a wind blowing 6 metres per sec., and an ascent to an altitude of 1,000 metres, after which, without landing, the airship must cover at least 40 kiloms.

#### Repairs to "Zeppelin II."

ALTHOUGH the repairs to "Zeppelin II" will be completed sooner than was at first anticipated, the completion of "Zeppelin III" will be correspondingly delayed. Both these vessels being of the same dimensions, the damaged fore part of the aluminium framework of "Zeppelin II" has been replaced by that which was built for her sister airship.

#### Second La Gatinerie Prize.

PARTICULARS have now been published regarding the second La Gatinerie Prize, which will be competed for shortly at Port Aviation. It is of a value of 2,500 francs in money, and the winner will be the aviator who, in the shortest time, makes two complete circuits of the 1.5 kilom. course, passing each time over a line of ballonettes placed at a height of 15 metres. It is hoped that a large entry will be received for this event.

#### Model Competition in France.

THE competition for model flying machines which was held last week at the Voltaire Gymnasium by the *Académie Aeronautique* of France, proved to be a great success. There was a large crowd of spectators to see the machines tried by the forty competitors. There were three classes, and the prize winners were:—

A. *Gliding Machines Flying the Longest Distance from a certain Height without Losing Equilibrium.*—1. Schmeltz et Besnard; 2. Jetot; 3. Kauffman; 4. René Stumpf; 5. Mauve.

B. *Motor-driven Flyers Starting from Earth.*—1. Guéneau; 2. Paulhan; 3. Mauve; 4. Cudet.

C. *Motor-driven Flyers Launched by Hand.*—1. Caspar; 2. Schmeltz et Besnard; 3. Espinosa; 4. Mme. Béchereau.

#### Gordon-Bennett Balloon Race.

IN accordance with his custom in previous years, Mr. Gordon-Bennett has promised to give a prize of £500 to the winner of the Gordon-Bennett Balloon Cup. The winner will also receive a proportion of the entry fees.

The team to represent France has now been chosen. It consists of MM. E. Dubonnet, Alfred Leblanc, and Maurice Bienaimé.

#### The Graph of Flight Resistance.

IN referring to the graphic method of finding the minimum flight resistance on p. 358 of last week's issue, the paragraph in question inadvertently conveys a wrong impression owing to the omission of the word "such" from the first line, which should have read "in any two such curves of opposite slopes." The minimum does not, of course, occur when  $x = y$  for any two curves, as might be inferred from the paragraph as printed.

## SOARING FLIGHT—HOW TO PERFORM IT.\*

By O. CHANUTE.

THERE is a wonderful performance daily exhibited in southern climes, and occasionally seen in northerly latitudes in summer, which has never been thoroughly explained. It is the soaring or sailing flight of certain varieties of large birds who transport themselves on rigid unflapping wings in any desired direction; who, in winds of 6 to 20 miles per hour, circle, rise, advance, return, and remain aloft for hours without a beat of wing, save for getting under way or convenience in various manoeuvres. They appear to obtain from the wind alone all the necessary energy, even to advancing dead against that wind. This feat is so much opposed to our general ideas of physics that those who have not seen it sometimes deny its actuality, and those who have only occasionally witnessed it subsequently doubt the evidence of their own eyes. Others, who have seen the exceptional performances, speculate on various explanations, but the majority give it up as a sort of "negative gravity."

Personal observation has shown convincingly by analysis that a gull weighing 2.188 lbs., with a total supporting surface of 2.015 sq. ft., a maximum body cross-section of 0.126 sq. ft., and a maximum cross-section of wing edges of 0.098 sq. ft., patrolling on rigid wings (soaring) on the weather side of a steamer, and maintaining an upward angle or attitude of  $5^{\circ}$  to  $7^{\circ}$  above the horizon, in a wind blowing 12.78 miles an hour, which was deflected upward  $10^{\circ}$  to  $20^{\circ}$  by the side of the steamer (these all being carefully observed facts) was perfectly sustained at its own "relative speed" of 17.88 m.p.h. and extracted from the upward trend of the wind sufficient energy to overcome all the resistances, this energy amounting to 6.44 foot-pounds per second.

It was shown that the same bird in flapping flight in calm air, with an attitude or incidence of  $3^{\circ}$  to  $5^{\circ}$  above the horizon and a speed of 20.4 miles an hour, was well sustained and expended 5.88 foot-pounds per second, this being at the rate of 204 pounds sustained per horsepower. It was stated also that a gull in its observed manoeuvres, rising up from a pile-head on unflapping wings, then plunging forward against the wind and subsequently rising higher than its starting point, must either time its ascents and descents exactly with the variations in wind velocities, or must meet a wind billow rotating on a horizontal axis and come to a pose on its crest, thus availing of an ascending trend.

But the observations failed to demonstrate that the variations of the wind gusts and the movements of the bird were absolutely synchronous, and it was conjectured that the peculiar shape of the soaring-wing of certain birds, as differentiated from the flapping-wing, might, when experimented upon, hereafter account for the performance.

These computations, however satisfactory they were for the speed of winds observed, failed to account for the observed spiral soaring of buzzards in very light winds, and the writer was compelled to confess: "Now, this spiral soaring in steady breezes of 5 to 10 m.p.h., which are apparently horizontal, and through which the bird maintains an average speed of about 20 miles an hour, is the mystery to be explained. It is not accounted for, quantitatively, by any of the theories which have been advanced, and it is the one performance which has led some observers to claim that it was done through

'aspiration,' i.e., that a bird acted upon by a current, actually drew forward into that current against its exact direction of motion."

A still greater mystery was propounded by the few observers who asserted that they had seen buzzards soaring in a dead calm, maintaining their elevation and their speed. Among these observers was Mr. E. C. Huffaker, at one time assistant experimenter for Professor Langley. The writer believed and said then that he must in some way have been mistaken, yet, to satisfy himself, he paid several visits to Mr. Huffaker in Eastern Tennessee, and took along his anemometer. He saw quite a number of buzzards sailing at a height of 75 to 100 ft. in breezes measuring 5 or 6 miles an hour at the surface of the ground, and once he saw one buzzard soaring apparently in a dead calm.

The writer was fairly baffled. The bird was not simply gliding, utilising gravity or acquired momentum, it was actually circling horizontally in defiance of physics and mathematics. It took two years and a whole series of further observations to bring those two sciences into accord with the facts.

Curiously enough the key to the performance of circling in a light wind or a dead calm was not found through the usual way of gathering human knowledge, i.e., through observations and experiment. These had failed because I did not know what to look for. The mystery was, in fact, solved by an eclectic process of conjecture and computation, but once these computations indicated what observations should be made, the results gave at once the reasons for the circling of the birds, for their then observed attitude and for the necessity of an independent initial sustaining speed before soaring began. Both Mr. Huffaker and myself verified the data many times, and I made the computations.

These observations disclosed several facts:—

1st. That winds blowing 5 to 17 m.p.h. frequently had rising trends of  $10^{\circ}$  to  $15^{\circ}$ , and that upon occasions when there seemed to be absolutely no wind, there was often nevertheless a local rising of the air estimated at a rate of four to eight miles or more per hour. This was ascertained by watching thistledown and rising fogs alongside of trees or hills of known height. Everyone will readily realise that when walking at the rate of four to eight miles an hour in a dead calm the "relative wind" is quite inappreciable to the senses, and that such a rising air would not be noticed.

2nd. That the buzzard, sailing in an apparently dead horizontal calm, progressed at speeds of 15 to 18 m.p.h., as measured by its shadow on the ground. It was thought that the air was then possibly rising 8.8 feet per second, or 6 m.p.h.

3rd. That when soaring in very light winds the angle of incidence of the buzzards was negative to the horizon—i.e., that when seen coming toward the eye, the afternoon light shone on the back instead of on the breast, as would have been the case had the angle been inclined above the horizon.

4th. That the sailing performance only occurred after the bird had acquired an initial velocity of at least 15 or 18 m.p.h., either by industrious flapping or by descending from a perch.

5th. That the whole resistance of a stuffed buzzard, at a negative angle of  $3^{\circ}$  in a current of air of 15.52 m.p.h.,

\* A paper read before the International Aeronautical Congress, October, 1907.



was 0.27 lbs. This test was kindly made for the writer by Professor A. F. Zahm in the "wind tunnel" of the Catholic University at Washington, D.C., who, moreover, stated that the resistance of a live bird might be less, as the dried plumage could not be made to lie smooth.

This particular buzzard weighed in life 4.25 lbs., the area of its wings and body was 4.57 sq. ft., the maximum cross-section of its body was 0.110 sq. ft., and that of its wing edges when fully extended was 0.244 sq. ft.

## CORRESPONDENCE.

\* \* The name and address of the writer (not necessarily for publication) MUST in all cases accompany letters intended for insertion, or containing queries.

### AERONAUTICAL ENGINES.

To the Editor of FLIGHT.

SIR,—In FLIGHT of the 12th instant, in an article entitled "Some Points in Aeronautical Engines," by A. J. McKinney, he refers to extra exhaust ports uncovered by the piston, "the length, in the line of piston travel, being not more than 18 per cent. of the stroke." Now, if the stroke is 4 ins. the length will be nearly  $\frac{3}{4}$  in. for the port, but the piston rings usually used would be little more than  $\frac{1}{4}$  in. thick (or deep). Is it necessary to fit rings wider than the port (i.e., about  $\frac{3}{4}$  in. wide), or would the stiffness of the ring prevent it slipping into the port? Will you please give me the equivalent of "15 or 17 mm." Would it be safe to build an engine with an auxiliary port considerably wider than the piston rings, and, if so, about what would be the limit in a line across the line of stroke to prevent the ring fouling the port, e.g., could you, on a 4-in. bore engine, have a port 2 ins. wide by 1 in. long with ordinary piston rings? The ends being kept clear, would the rings pass it safely?

All good wishes for the future of FLIGHT.

Yours truly,

Sandgate.

NOEL VERNHAM.

[In order to save delay we submitted Mr. Vernham's letter to Mr. McKinney, and are now able to append the latter gentleman's reply below.—ED.]

To the Editor of FLIGHT.

SIR,—In reply to Mr. Noel Vernham's letter on exhaust ports, the point raised is an interesting one. Though I gave the limit as 18 per cent., I should not recommend it as the maximum unless a non-return valve is fitted to prevent air being sucked in on the induction stroke. Apart from this, however, there are no mechanical difficulties in practice, providing that the port is not wider (i.e., in a horizontal plane, assuming the engine is a vertical one) than  $\frac{3}{4}$  in. That is, one can use exhaust auxiliary ports which are oblong or rectangular, always providing that the greatest dimension does not coincide with the plane of the piston rings. If the width (in the transverse direction) exceeds  $\frac{3}{4}$  in., there is great danger of the ends of one, or more, piston rings expanding when passing over the port, which, of course, breaks them off immediately. When experimenting recently on an engine which had a bore of 82 mm., I found ports over  $\frac{3}{4}$  in. in width dangerous in this respect. Another result of my experiments was that two or three circular ports  $\frac{3}{4}$  in. in diameter, cut so as to be just uncovered at the lower limit of the piston travel, were preferable to one large one of corresponding area. By the way, the inner edges of the ports must be carefully cleaned after cutting the orifices, as otherwise the cylinder would soon be seriously scored. A point to bear in mind is that while the power is increased, and the engine, particularly when of the air-cooled type, keeps cooler, the lubricating oil tends to blow out. The auxiliary ports, then, should have a non-return valve and piping to convey the gases to the silencer. If Mr. Vernham would like to discuss the matter further, perhaps he would care to communicate with me direct, as otherwise I fear I should take up too much valuable space in your journal.

Truly yours,

A. J. MCKINNEY.

### PROPELLER CHALLENGE.

To the Editor of FLIGHT.

SIR,—I am sorry Mr. Cochrane's reply does not give the revolutions per minute and brake horse-power of his  $\frac{1}{2}$ -h.p. electric motor. I should have liked to have tried my amateur hand to win the prize he so generously offers, but I cannot make the attempt without these particulars.

With these data, it became surprisingly easy to compute the performance with the co-efficients of Lilienthal for various angles of incidence and to demonstrate how this buzzard could soar horizontally in a dead horizontal calm, provided that it was not a vertical calm and that the air was rising at the rate of 4 or 6 m.p.h., the lowest observed, and quite inappreciable without actual measuring.

(To be concluded.)

I am disappointed that what promised to be an interesting competition should fall through, but I suppose there must be some difficulty in ascertaining this necessary information.

Mr. Sidney Hollands, according to his letter dated June 7th, prefers to enter a competition for larger propellers.

I have a model motor boat, propelled by an air propeller 3 feet diameter, driven by a petrol motor. If he and any other gentleman would like to make 3-ft. screws for the purpose of a friendly competition, I shall be glad to test them, as I am already fitted up for the work.

I cannot try them against my own, as mine is not designed to give the highest push possible when the boat is stationary, but to work most efficiently when the boat is travelling at a good speed.

I have several times made brake tests of the motor, and I find the actual brake horse-power at the propeller is just 2 when running 1,100 revs per min.

The propeller is at the back of the boat, and it revolves in a left-handed direction as viewed from behind, and, of course, competing propellers must be shaped to suit this direction.

My propeller weighs 2 lbs., but the weight of competing propellers may be anything up to, say, 10 lbs.

Yours truly,

ALFRED WALKER.

Shipley.

To the Editor of FLIGHT.

SIR,—I am greatly interested in Mr. William Cochrane's letter published in FLIGHT of June 5th. I admire his pluck in issuing such a broad challenge. His fan must be exceptionally good to inspire him with such confidence.

As Mr. Cochrane gives no particulars regarding the size of his fan, the speed run at, nor the actual weight lifted, he places his competitors at a disadvantage.

Most inventors consider their own pet ideas the best, and I must plead guilty to a weakness in that direction. Therefore, I am anxious to accept Mr. Cochrane's challenge under his own conditions, and at any time or place convenient to him.

I give some particulars of the weight-lifting capacity of some fans I have, but, following Mr. Cochrane's example, I make no mention of the speed, size, or horse-power used. I have a fan which weighs, without its bars, 2½ ozs. This fan lifts, direct from the ground, 6 lbs. dead weight.

Another fan, weighing, without its bars, 5½ ozs., lifts 20 lbs. dead weight. In both cases the weights are kept suspended after lifting.

I should be pleased to hear from Mr. Cochrane re the above.

I am, yours faithfully,

E. M. WILDEY.

### MR. ROE'S TRIPLANE.

To the Editor of FLIGHT.

SIR,—It may come as a surprise to your readers to learn that I have been making dozens of short flights with my British-built aeroplane during the last few weeks; true, they are hardly more than jumps, being only 2 and 3 feet high and 50 or so feet in length.

Personally, I would have preferred to let this fact leak out on its own accord by winning the £100 and £1,000 prizes for the 100 yds. and 1 mile flight respectively, but, to be candid, to carry 40 lbs. per h.p. has proved a bigger task than I calculated on, for my machine, with self aboard, weighs 400 lbs., and is driven by a 10-h.p. air-cooled J.A.P. motor cycle engine; but I am confident there is sufficient power, and there is every reason to believe I shall continue to get better results with further experiments. Although I have been trying various gear-ratios, pitches, width of blades, diameters, two and four bladed propellers, and have kept a careful record of each experiment, there still remains quite a number of varieties to be tried yet.

Carrying 40 lbs. per h.p. seems easy enough on paper but rather different in practice.

The reason the above announcement is made, is because I feel confident that the machine I am now experimenting with has

reached a stage well worth while copying and building in numbers, as it is so light and handy, and will obviously keep afloat under perfect control with a little more thrust.

Perhaps my experiences may be of interest. The first two flights the machine heeled over, and broke the left tips of lowest plane on both occasions. I thought this was due to the torque of propeller, but am glad to say it was my bad steering, and should the machine lurch over, a slight twist of planes brings it back instantly; but running against winds of 12 m.p.h. or less, the machine practically balances itself. It can be steered entirely by twisting main-planes in conjunction with rear vertical rudder when running along the ground, and the front or back of machine can be raised first, according to the angle of main-planes. I usually run along with main-planes at a slight angle; this allows machine to gain speed, and the tail to rise; on increasing the angle of main-planes to about  $10^\circ$  the front comes off the ground, but owing to insufficient thrust it soon comes down again; while it is up it is quite obvious how quickly the machine answers to the steering.

The aeroplane in question is a triplane (see No. 19, FLIGHT, of May 8th), having 320 sq. ft. of surface,  $1\frac{1}{4}$  lb. per sq. ft. loaded, main-planes forward, tail well in rear; the angle of main-planes can be tilted for vertical and twisted for lateral steering. The patented system of bracing the twisted planes will, I believe, prove a valuable improvement, as it is applicable to biplanes, triplanes or multiplanes. The essence of the idea is, one plane is made rigid from tip to tip, and the rest of the planes take their rigidity from this one by means of hinged struts, consequently all planes follow the movement of rigid plane without any lateral or undue strains put upon them. Owing to the rigid plane being stiff from tip to tip, there is no need to have cables and pulleys from their tips. As a result, they are controlled from two points about 5 ft. on either side of the centre line, through levers and rods; the planes are hinged at this point, and can be folded up for transportation without interfering with any part of the steering mechanism.

My reason for making the machine so light is almost too obvious to be mentioned, and one reason is to produce an aeroplane that will rise at a slow speed, and once off the ground the angle of planes can be reduced, and speed increased; then again, being so light considerably reduces the speed and shocks on landing. One would naturally think a light machine would be more difficult to control in windy weather than a heavy one, but I am of the opinion if the main-planes can be twisted it will be more easily controlled than a heavy one, with rigid planes, and my experiences seem to bear this out.

Yours faithfully,  
A. V. ROE.

## TERMINOLOGICAL EXACTITUDES.

To the Editor of FLIGHT.

SIR,—Could your valuable paper, coupled with the help of any technical expert, tell me whether I am right in describing my aeroplane as an "aerobifoidal pterygoidal aerodrome," and if not, why not?

A speedy reply would be welcome, as any further study would, I am sure, conduce to an attack of lockjaw.

Yours truly,  
J. T. C. MOORE-BRABAZON.

## MODEL FLYERS—A CHALLENGE.

To the Editor of FLIGHT.

SIR,—I note two replies to my challenge for model flying. I wish to impress particularly on anyone accepting my challenge that I shall hold them strictly to the weight to be carried per sq. ft., as I do not intend to fly against any model which a puff of wind will carry over a house top or which will turn "topsy-turvy" and right itself without damage. Such a thing as this is not practical, and I refuse to be drawn into anything non-practical. I am making arrangements for model flying, and will arrange to meet all comers in a short time when the arrangements are completed.

My models are a hand model without power, 5 sq. ft. of canvas, 2 lbs. 2 ozs. in weight, and a spring motor model,  $14\frac{1}{2}$  sq. ft. of canvas,  $4\frac{1}{2}$  lbs. in weight.

Yours very truly,  
MONTFORD KAY.

To the Editor of FLIGHT.

SIR,—With further reference to model aeroplanes, we seem to have been rather gone for over making the statement that "New-Things" were the first to put model aeroplanes on the market for sale. With all respect to Mr. V. Griffiths, who has not seen a model fly over 30 ft., we can only think it is because he has had no

opportunity. Mr. Griffiths cannot possibly compare Clarke's flyers with the model aeroplanes we are selling; most of our machines are copies of man-carrying flyers, and not toys like one sees in the top shops all over the country. We have sent our flyers to every country in the world, and are receiving repeat orders every day. We again repeat the statement that we were the first to put model aeroplanes, actual flyers, on the market. The models that we have put upon the market took the first prize, Model Competition, Aeronautique Club, 1908, at Paris, and the Grand Prize Lepine Competition, 1908, at Paris. There is no country in the world that is so advanced in aeronautics as France.

Messrs. Chippendale and Co.'s letter clearly shows the want of confidence in their own machines, because they want to go to the highest point of the Stadium to test the flight of their machines. We take it there are many machines, when dropped from the cross of St. Paul's Cathedral, that will fly down to the ground.

We have a large stand at the Aeronautical Section at the White City, where the latest flying models can be seen and accessories bought for building model aeroplanes. Before this Exhibition closes there will, in all probability, be an opportunity for the public to witness a competition between the purchasers of our models as to the length of flight, and we are drawing up a scheme for offering a substantial prize for the competitor who can obtain the best flight from the various machines. This will be an opportunity for the public to witness the proof of our statements, that our machines are the best and the only real models of flying machines on the market.

Yours truly,  
NEW-THINGS, LTD.,

CECIL STREETER, General Manager and Secretary.



## PUBLICATIONS RECEIVED.

*Flying Machines: Past, Present, and Future.* By A. W. Marshall and H. Greenly. London: Percival Marshall and Co. Price 1s. net.

*Monographies d'Aviation: No. 5. Construction et Manœuvres de l'Aéroplane Wright.* By A. Bracke. Paris: F. Louis Vivien, 20, Rue Saunier. Price 0.75 fr.



## Aeronautical Patents Published.

Applied for in 1908.

Published June 24th, 1909.

4,519. A. H. EDWARDS. Aeroplanes.

Applied for in 1909.

Published June 24th, 1909.

7,666. J. L. Garsed. Steering and balancing aerial machines.

## BACK NUMBERS OF "FLIGHT."

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